

JAPANESE

[JP,2001-049043,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE
INVENTION TECHNICAL PROBLEM MEANS EXAMPLE

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to an effective polychloroprene latex constituent as adhesives, and a manufacturing method for the same. It is related with a chloroprene latex composition which gives the adhesive composition which was excellent in initial adhesion performance, especially the adhesion performance in a damp or wet condition in more detail, and was excellent in balance with heat resistance, and a manufacturing method for the same.

[0002]

[Description of the Prior Art]Conventionally, the adhesives which used polychloroprene as the base had the solvent type in use. However, the demand of desolventization-izing is increasing in recent years from problems, such as toxicity according [solvent type adhesive] to the organic solvent in the case of manufacture or use, fire danger, and environmental pollution.

[0003]It is thought that the method of substituting latex adhesive for solvent type adhesive is effective as the technique of desolventization-izing, and examination of the latex adhesive which uses various polymer is performed briskly.

[0004]Chloroprene latex adhesives reveal a high adhesive property from immediately after lamination especially by applying to the both sides of adherend to join, and pasting together, after drying these adhesives layer. Since drying time was needed while use is expected as drainage system contact adhesive from such a feature, the special dryer was needed for shortening taking time to paste up, after applying adhesives, and drying time, and SUBJECT, such as being connected with a cost hike, occurred.

[0005]For example, in JP,51-39262,B, to chloroprene 100 weight section, use the salts of long chain fatty acid of three to 5 weight section, or rosin acid for an emulsifier, and under existence of 0.09 to n-dodecyl mercaptan 0.15 weight section, Polymerize this monomer in alkaline emulsified liquid at low temperature from 20 **, and a polymerization is suspended with 90 to 98% of the inversion rate of a monomer, The manufacturing method of the polychloroprene latex adhesives which built latex of the polychloroprene containing 40 to 90 % of the weight of gel parts, and blended the tackifier is indicated. Although the chloroprene latex which uses the salts of rosin acid also for JP,51-136773,A, JP,52-992, A, JP,56-74108,A, and JP,57-162709,A is indicated, The latex produced according to the example of these gazettes is insufficient of initial adhesion performance, especially the adhesion performance in a damp or wet condition.

This improvement had become SUBJECT.

[0006]

[Problem(s) to be Solved by the Invention]This invention provides the chloroprene latex composition which solved the problem of such conventional technology, and was excellent in initial adhesion

performance, especially the adhesion performance in a damp or wet condition, and was excellent also in balance with heat resistance, and its manufacturing method.

[0007]

[Means for Solving the Problem] That this invention persons should solve above-mentioned SUBJECT, as a result of repeating examination wholeheartedly, it polymerizes at a temperature lower than 30 **, And a chloroprene polymer is the weight average molecular weight of a part for gel and sol of a specific amount, HLB by chloroprene latex containing the polyoxyalkylene alkyl ether of 10-17 in latex, including sodium ion and/or potassium ion. It found out that a chloroprene latex adhesive composition which was excellent in initial adhesion performance, especially the adhesion performance in a damp or wet condition, and was excellent also in balance with heat resistance was obtained, and resulted in completion of this invention.

[0008] Namely, one sort or two sorts or more which chloroprene or chloroprene, and it and a copolymerizable monomer are obtained by this invention polymerizing at a temperature lower than 30 **, and are chosen from rosin acid, rosin acid sodium, and rosin acid potassium, HLB carries out 0.01-10 weight-section content of the polyoxyalkylene alkyl ether of 10-17 to chloroprene or chloroprene, and it and monomer 100 copolymerizable weight section, including sodium hydroxide and/or a potassium hydrate, A chloroprene polymer is a chloroprene latex composition whose weight average molecular weight of sol is 400,000 or more including a part for 3 to 40% of the weight of gel. The amount of sodium ion of this invention in chloroprene latex is the above-mentioned chloroprene latex composition whose amount of potassium ion is 0.15 to 1.0 % of the weight per solid content of latex 0.15 to 1.0% of the weight per solid content of latex.

[0009] This invention receives chloroprene or chloroprene, and it and monomer 100 copolymerizable weight section, One sort chosen from rosin acid, rosin acid sodium, and rosin acid potassium, or two sorts or more Three to 7 weight section, The amount of sodium ion in chloroprene latex sodium hydroxide and/or a potassium hydrate 0.15 to 1.0 % of the weight per solid content of latex, It is used so that the amount of potassium ion may be 0.15 to 1.0% of the weight per solid content of latex, An inversion rate of a monomer polymerizes to 80 to 95% at a temperature lower than 30 ** under existence of a chain transfer agent, And HLB is a manufacturing method of the above-mentioned chloroprene latex composition which carries out 0.01-10 weight-section addition of the polyoxyalkylene alkyl ether of 10-17 before a polymerization of chloroprene, and/or after a polymerization.

[0010] This invention is explained in detail below. A chloroprene polymer in this invention is a copolymer produced by carrying out copolymerization of the one or more sorts of a homopolymer of 2-chloro-1,3-butadiene (it is described as chloroprene below), and chloroprene and other copolymerizable monomers.

[0011] As chloroprene in this invention, and a copolymerizable monomer, For example, 2,3-dichloro-1,3-butadiene, 1-chloro-1,3-butadiene, Butadiene, isoprene, styrene, acrylonitrile, acrylic acid and its ester species, methacrylic acid, its ester species, etc. are mentioned, and two or more sorts of these may be used if needed.

[0012] Saying content of an ingredient insoluble to a toluene solvent in a part for gel of a chloroprene polymer in this invention, sol means an ingredient meltable to a toluene solvent. As for a chloroprene polymer in this invention, the amount of the gel is in 3 to 40% of the weight of a range. It can ask for a part for gel by a following method. It dissolves in toluene for 20 hours at 23 ** which freeze-dries chloroprene polymer latex and sets weight to A (it adjusts to 0.6% of the weight), and a centrifuge is used, and also insoluble matter, i.e., gel, is separated using a wire gauze of 200 meshes. Let the remainder which separated gel be sol. Gel is dried under after-air-drying 110 ** atmosphere for 1 hour, and weight is set to B. A part for gel is computed according to the following formula.

A part for gel = $B/A \times 100$ (%)

[0013] In this invention, an important, sol of a chloroprene polymer, i.e., weight average molecular weight of a toluene solvent soluble component, role is played, and weight average molecular weight of sol of a chloroprene polymer in this invention is 400,000 or more. A range with preferred weight average molecular weight is 1,200,000 or less [450,000 or more].

[0014] Having specified a part for gel of a chloroprene polymer and weight average molecular weight of sol as mentioned above in this invention is based on the following reasons.

[0015] A chloroprene polymer depends an outstanding manifestation of initial adhesion performance in this invention on sol excellent in molecular mobility being included so much. For this reason, fusion of a chloroprene molecule chain between chloroprene latex particles and in an adhesion interface takes place promptly, and adhesive strength becomes possible [it being revealed in an instant and revealing outstanding initial adhesion performance]. If the amount of gel of a chloroprene polymer exceeds 40 % of the weight, this initial adhesion performance will fall substantially.

[0016] On the other hand, in common chloroprene latex adhesives known until now, when a low

chloroprene polymer for gel is used, heat resistance tends to be inferior, and it was inferior to balance of an initial adhesive property and heat resistance. In this invention, when the amount of gel of a chloroprene polymer makes weight average molecular weight of sol or more into 400,000 three to 40% of the weight, it becomes outstanding initial adhesion performance and the thing excellent in heat-resistant balance. When the amount of gel is [weight average molecular weight of less than 3 % of the weight and sol] less than 400,000, heat resistance falls remarkably.

[0017]In this invention, as for a weight molecular weight of sol, when balance-ization of a still more advanced initial adhesive property and heat resistance is required, the amount of gel is 5 to 30 % of the weight, and it is preferred to use 500,000 or more.

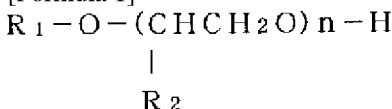
[0018]In order to obtain such chloroprene latex adhesives, the amount of gel of a chloroprene polymer should just adjust using a well-known polymerization method so that weight average molecular weight of sol may become 400,000 or more three to 40% of the weight, but since advanced molecule control is needed, adjusting by the following methods is preferred.

[0019]Generally, in order to obtain chloroprene latex, also that it is simple and industrially, a method of carrying out a radical polymerization in aqueous emulsified liquid is an advantageous method. As an emulsifier to be used, for example In this case, salts of rosin acid, salts of fatty acid, Water soluble polymers, such as an anionic system emulsifier like alkyl-sulfuric-acid ester salt, such as alkyl-sulfonic-acid salts, such as alkyl BENSEN sulfonic acid Na, and lauryl sulfate Na, the Nonion system emulsifier, a cation system emulsifier, and polyvinyl alcohol, etc. are mentioned. However, in this invention, from a viewpoint of a polymerization control side and initial adhesion performance, especially adhesion performance in a damp or wet condition. It is required to use rosin acid and/or rosin acid chloride at least, and one sort chosen from rosin acid, rosin acid sodium, and rosin acid potassium or two sorts or more, and sodium hydroxide and/or a potassium hydrate are used. One sort chosen from rosin acid, rosin acid sodium, and rosin acid potassium, or two sorts or more to chloroprene or chloroprene, and it and monomer 100 copolymerizable weight section 3 - 7 weight-section implication, And it is preferred to use sodium hydroxide and/or a potassium hydrate so that the total quantity of the amount of sodium ion and the amount of potassium ion may become more superfluous than the amount of neutralization of rosin acid. One sort of the above-mentioned emulsifier or two sorts or more may be used together to this.

[0020]In this invention, the Nonion system emulsifier of polyoxyalkylene alkyl ether preferably [containing 0.01 to 10 weight section to chloroprene or chloroprene, and it and monomer 100 copolymerizable weight section], and more preferably 0.1 to 3 weight section, A leaf is 0.1 to 1 weight section preferably. It is effective in improving stability to multicharged ion, and freezing and freeze thaw stability of latex by using together rosin acid and the Nonion system emulsifier of polyoxyalkylene alkyl ether, and also initial adhesion performance in a damp or wet condition can be improved. The Nonion system emulsifier of polyoxyalkylene alkyl ether can be added after the time of a polymerization, or a polymerization. As an Nonion system emulsifier of polyoxyalkylene alkyl ether, ranges of HLB are 10-17, and it has the following structure.

[0021]

[Formula 1]



[0022]Here, the alkyl group of the carbon numbers 8-24 and R₂ of R₁ are the alkyl groups of H or the carbon numbers 1-4. Especially, poly (ethylene glycol propylene glycol copolymer) alkyl ether is preferred.

[0023]Control of a part for gel of a chloroprene polymer and a molecular weight of sol becomes possible by adjustment of the ** last conversion further with use of ** chain transfer agent, and the amount used and ** polymerization temperature.

[0024]If it is generally first used to manufacture of a chloroprene polymer as a chain transfer agent, there will be no restriction in particular, For example, long chain alkyl mercaptan, such as n-dodecyl mercaptan and tert-dodecyl mercaptan. Publicly known chain transfer agents, such as dialkyl xantho gene disulfide, such as diisopropyl xantho gene disulfide and diethyl xantho gene disulfide, and iodoform, can be used. In a part for gel, and a molecular weight controlling surface of sol, use of long chain alkyl mercaptan or dialkyl xantho gene disulfide is preferred.

[0025]the [next, / persulfate, such as potassium persulfate in which a polymerization catalyst is usually used for an emulsion polymerization of chloroprene, and] -- organic peroxide, such as 3-butylhydronalium peroxide, etc. can be used and it is not limited in particular. A polymerization reaction can be more smoothly advanced by using together anthraquinone sulfone sodium, formamidinesulfinic acid, etc. Although it is preferred about polymerization temperature that it is the

range of 0-55 ** in an emulsion polymerization of general chloroprene on polymerization control, In order for the amount of [in this invention] gel to obtain [for weight average molecular weight of sol] 400,000 or more chloroprene polymers three to 40% of the weight, it is required to polymerize at a temperature lower than 30 **, and it is more preferred to carry out at 5-20 ** low temperature. By polymerizing at low temperature more, a part for gel can be stopped low and weight average molecular weight of sol can be enlarged. By making polymerization temperature low, 1 in a chloroprene polymer main chain and 4-trans configuration increase, and a high crystalline chloroprene polymer can be obtained. Initial adhesive strength improves and also crystallization of a chloroprene polymer enables it to obtain an adhesives layer with high cohesive force.

[0026]Chloroprene or chloroprene and it which are used in a manufacturing method of this invention, and the copolymerizable last conversion of a monomer, It is preferred that it is 80 to 95% of range, and it becomes controllable [a chloroprene polymer which has the weight average molecular weight of a target part for gel and sol] by considering it as the last conversion of this range. What is necessary is to add terminators, such as phenothiazin, hydroxyamine, and tertiary-butylcatechol, and just to suspend a polymerization so that it may become the predetermined last conversion in order to control the last conversion in this range.

[0027]Although what is necessary is just to adjust an addition of a chain transfer agent in this last conversion range so that a part for target gel and a molecular weight of sol can be attained, For example, when n-dodecyl mercaptan is used as a chain transfer agent, 0.06-0.18 weight-section use of the amount used is carried out per chloroprene or chloroprene, and it and copolymerizable monomer 100 weight section, and the last conversion can be attained by polymerizing in 80 to 95% of range.

[0028]In this invention, although solids concentration in particular of chloroprene latex is not limited, it is preferred that it is in 45 to 65% of the weight of a range, and it is 55 to 65% of the weight of a range still more preferably 50 to 65% of the weight more preferably. By considering it as higher solids concentration, it becomes the latex which was more excellent in an initial adhesive property. Improvement in adhesion performance by raise in solid content becomes remarkable to adhesion especially in a damp or wet condition. Solids concentration can be adjusted by the monomer / water ratio at the time of a polymerization, or monomer divided addition, and also it is controllable by diluting by addition of concentration or water to required concentration. As the method of concentration, although there are vacuum concentration etc., it does not limit in particular.

[0029]In this invention, in order especially to make such high concentration latex easy to deal with and to reveal advanced adhesion performance in a damp or wet condition, it is preferred to carry out specific amount content of sodium ion and the potassium ion into latex, using rosin acid as an emulsifier. As amount of the rosin acid used in this case, the range of three to 7 weight section is preferred to chloroprene or chloroprene, and it and monomer 100 copolymerizable weight section, and it is the range of four to 6 weight section more preferably. The amount of sodium ion in latex 0.15 to 1.0 % of the weight per solid content of latex, 0.3 to 1.0% of the weight, it is 0.5 to 1.0 % of the weight still more preferably, and it is more preferably preferred that the amount of potassium ion is 0.15 to 1.0 % of the weight per solid content of latex. Chloroprene latex which was excellent in freeze thaw stability or layer separation stability under neglect by this, was excellent in storage stability, and also was excellent in the adhesion performance in a damp or wet condition can be obtained.

[0030]In chloroprene latex of this invention, addition of PH regulator, freezing stabilizer, etc. is possible after a polymerization. According to the demand characteristics of the use, in the case of use, rosin resin, rosin ester resin, Hydrogenation rosin resin, polymerization rosin resin, alpha pinene resin, beta-pinene resin, Tackifiers, such as terpene phenol resin, C5 fraction system petroleum resin, C9 fraction system petroleum resin, C5 fraction / C9 fraction system petroleum resin, DCPD system petroleum resin, alkylphenol resin, xylene resin, coumarone resin, and coumarone indene resin, can be added. As the addition method of a tackifier, in order to distribute resin uniformly in an adhesive composition, adding, after considering it as an emulsion is preferred. In addition, hardening agents, such as a plasticizer and softeners, such as inorganic bulking agents, such as metallic oxides, such as a zinc oxide, calcium carbonate, and silica, dibutyl phthalate, and process oil, and also various antiaging agents and a rubber accelerator, and isocyanates, a thickener, etc. can be blended arbitrarily.

[0031]Chloroprene latex adhesives obtained by this invention are preferred as congener, such as paper, wood, cloth, leather, a leather, rubber, a plastic, form, earthenware, glass, ceramics, and metal, or an object for junction adhesion of a different kind. It excels in the adhesion performance especially in a damp or wet condition, and adhesion performance higher than a case where at least one side is porous bodies, such as paper, wood, cloth, leather, a leather, and form, is obtained. moreover -- being related with an execution method at the time of adhesion -- brush coating and a trowel -- coating, spray coating, roll coater spreading, etc. are possible, and except adhesion by a damp or wet condition, initial adhesion performance in which it excelled also, for example in contact adhesion after artificial drying is revealed, and it excels also in balance with heat resistance.

[0032]

[Example] Although an example explains this invention concretely below, these examples do not limit this invention. A weight reference shows the part and % in the following explanation.

[0033] Using a reactor with example of experiment 1 content volume of 3 L, under a nitrogen air current 100 copies of water, Five copies of disproportionation rosin acid of the acid value 160, 0.8 copy of sodium hydroxide, 0.3 copy of potassium hydrate, 0.3 copy of sodium salt of a formaldehyde naphthalene sulfonic acid condensate and 0.3 copy of sodium hydrogen sulfite were prepared, and 100 copies of chloroprene monomers and 0.14 copy of n-dodecyl mercaptan were added after the dissolution, agitating. It polymerized at 10 °C under a nitrogen atmosphere, the emulsion of phenothiazin was added in the place where the last conversion reached to 90%, using potassium persulfate 0.1 weight section as an initiator, and the polymerization was suspended. After removing an unreacted monomer under decompression, 0.5 copy of Nonion system emulsifier A (made by trade name emulgen LS-106 Kao Corp.) was added, and chloroprene latex was obtained. It condensed by having evaporated moisture under decompression, and it adjusted so that solids concentration might be 55 % of the weight. All the content of each additive agent was totaled and the rate (%) over the solid content in latex showed the sodium ion (Na ion) in latex, and potassium ion (K ion).

[0034] Next, freeze thaw stability was checked by the following methods about this chloroprene latex.

[The low temperature performance of raw latex] Latex was neglected for one week under 5 °C atmosphere, and the state of subsequent latex was checked visually. O and the thing which solidified or occurred [congelation] were shown for what does not change a latex state as x. About this chloroprene latex, the adhesive composition was adjusted by the formula shown in Table 1, and the adhesive property was evaluated by the following methods.

[Initial adhesive strength] The urethane foam (20 mm [in thickness] x 50-mm x 50 mm in width) of density 30 kg/m³ was used for adherend, and spray coating of the adhesives of 70 g/m² was carried out under 23 °C atmosphere. [in length] The adhesion sides of two urethane foam were piled up in the state of un-drying adhesives after neglect for 1 minute in after-spreading 23 °C atmosphere, 40 mm in thickness was compressed into 10 mm, and it was held for 5 seconds. The tensile test was promptly done on the adhesion side and the perpendicular direction with the tension tester (tension speed 200 mm/min) after that, and intensity was measured.

[Heat-resistant creep test] The urethane foam (50 mm [in thickness] x 100-mm x 100 mm in width) of density 30 kg/m³ was used for adherend, and spray coating of the adhesives of 70 g/m² was carried out under 23 °C atmosphere. [in length] an adhesive application side is gathered after neglect for 1 minute in after-spreading 23 °C atmosphere -- as (a thickness direction is folded up -- as) -- it pasted up and was neglected under 60 °C atmosphere for 4 hours. That in which O and an adhesion side opened the thing holding an adhesion state wide was displayed as x after neglect.

[0035] The obtained molecular weight of a part for gel and sol of a chloroprene polymer was measured in accordance with the following method.

[Gel part measurement] The latex sample was freeze-dried and weighed precisely and it was referred to as A. It dissolved with toluene at 23 °C for 20 hours (it prepares to 0.6%), and the centrifuge was used, and also a part for gel was separated using the wire gauze of 200 meshes. Under after-air-drying 110 °C atmosphere, it dried for 1 hour, a part for gel was weighed precisely, and it was referred to as B. a part for gel -- a lower type -- °C -- it computed.

A part for gel = $B/A \times 100$ (%)

[0036] [Determination of molecular weight] GPC measurement was performed on condition of the following. It asked for calculation of the molecular weight by polystyrene conversion. The sample prepared the separated sol in the THF solution 0.1%.

カラム : PLゲル 10 μm GUARD+

PLゲル 10 μm Mixed-B 3本

Column size: 7.5 mm φ x 50 mm (GUARD), 7.5 mm φ x 300 mm (Mixed-B)

column temperature: -- 35 °C solvent: -- THF and exit-velocity: 1 ml/min detector: SIMADZU RID-6A

[0037] The weight average molecular weight for sol (Mw) was 660,000 10% by the gel of the chloroprene latex A.

[0038] In example 2 Example 1, the Nonion system emulsifier B (trade name emulgen LS-114 Kao Corp. make) was used instead of the Nonion system emulsifier A, and chloroprene latex was manufactured and evaluated like Example 1.

[0039] In example 3 Example 1, the Nonion system emulsifier C (trade name emulgen MS-110 Kao Corp. make) was used instead of the Nonion system emulsifier A, and chloroprene latex was manufactured and evaluated like Example 1.

[0040] In comparative example 1 Example 1, the Nonion system emulsifier D (trade name emulgen 105 Kao Corp. make) was used instead of the Nonion system emulsifier A, and chloroprene latex was

manufactured and evaluated like Example 1.

[0041]In comparative example 2 Example 1, the Nonion system emulsifier E (trade name emulgen A500 Kao Corp. make) was used instead of the Nonion system emulsifier A, and chloroprene latex was manufactured and evaluated like Example 1.

[0042]In comparative example 3 Example 1, chloroprene latex was manufactured and evaluated like Example 1, without using the Nonion system emulsifier.

[0043]In example 4 Example 1, sodium hydroxide was made into 0.6 copy, the potassium hydrate was made into 0.5 copy, and chloroprene latex was manufactured and evaluated like Example 1. The result was shown in Table 2.

[0044]In example 5 Example 1, polymerization temperature was 15 **, and chloro PURENRATEKKUSUSU was manufactured and evaluated. The result was shown in Table 2.

[0045]In example 6 Example 5, conversion was made into 80%, and chloroprene latex was manufactured and evaluated. The result was shown in Table 2.

[0046]In comparative example 4 Example 1, n-dodecyl mercaptan was made into 0.04 copy, and chloroprene latex was manufactured and evaluated like Example 1.

[0047]In comparative example 5 Example 1, n-dodecyl mercaptan was made into 0.3 copy, and chloroprene latex was manufactured and evaluated like Example 1.

[0048]

[Table 1]

| | | 実施例1 | 実施例2 | 実施例3 | 比較例1 | 比較例2 | 比較例3 |
|---------------------|---|------|------|------|------|------|------|
| ラテックス処方 (部) | クロロプレン | 100 | 100 | 100 | 100 | 100 | 100 |
| | n-ドデシルメルカプタン | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 | 0.14 |
| | 純水 | 100 | 100 | 100 | 100 | 100 | 100 |
| | 不均化ロジン酸 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| | 水酸化ナトリウム | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 | 0.8 |
| | 水酸化カリウム | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| | 亜硫酸水素ナトリウム | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| | ポリアクリレート-マレイン酸縮合物のナトリウム塩 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| | ノニオン系乳化剤A ¹⁾ ノニオン系乳化剤B ²⁾ ノニオン系乳化剤C ³⁾ ノニオン系乳化剤D ⁴⁾ ノニオン系乳化剤E ⁵⁾ | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | |
| | Naイオン (%) | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 |
| Kイオン (%) | | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 | 0.27 |
| ラテックス重合条件 | 重合温度 ℃ | 10 | 10 | 10 | 10 | 10 | 10 |
| | 重合率 % | 90 | 90 | 90 | 90 | 90 | 90 |
| ラテックス性状 | 固形分濃度 W t % | 55 | 55 | 55 | 55 | 55 | 55 |
| | ゲル含有量 % | 10 | 10 | 10 | 10 | 10 | 10 |
| | ゾル分のMw ×10 ⁻⁴ | 66 | 66 | 66 | 66 | 66 | 66 |
| 生ラテックスの低温性 (5℃×1週間) | | ○ | ○ | ○ | ○ | ○ | × |
| 接着剤配合処方 | ラテックス | 100 | 100 | 100 | 100 | 100 | 100 |
| | DBP ⁶⁾ | 6 | 6 | 6 | 6 | 6 | 6 |
| | グリシン | 5 | 5 | 5 | 5 | 5 | 5 |
| 接着剤PH (20℃) | | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 | 8.9 |
| 接着試験結果 | 初期接着強度 N/cm ² | 1.9 | 1.8 | 2.0 | 0.8 | 0.7 | 1.6 |
| | 耐熱クリープ (60℃×4時間) | ○ | ○ | ○ | ○ | ○ | ○ |

[0049]

[Table 2]

| | | 実施例4 | 実施例5 | 実施例6 | 比較例4 | 比較例5 |
|---------------------|-------------------------------|------|------|------|------|------|
| ラテックス処方 (部) | クロロプレン | 100 | 100 | 100 | 100 | 100 |
| | n-ドデシルメルカプタン | 0.14 | 0.14 | 0.12 | 0.04 | 0.30 |
| | 純水 | 100 | 100 | 100 | 100 | 100 |
| | 不飽和カルボン酸 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| | 水酸化ナトリウム | 0.6 | 0.8 | 0.8 | 0.8 | 0.8 |
| | 水酸化カリウム | 0.5 | 0.3 | 0.3 | 0.3 | 0.3 |
| | 亜硫酸水素ナトリウム | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| | オレフィン・ヒド・ナフタレンスルホン酸縮合物のナトリウム塩 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| | ノニオン系乳化剤A ¹⁾ | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |
| Naイオン (%) | | 0.50 | 0.63 | 0.63 | 0.63 | 0.63 |
| Kイオン (%) | | 0.43 | 0.27 | 0.27 | 0.27 | 0.27 |
| ラテックス重合条件 | 重合温度 ℃ | 10 | 15 | 15 | 10 | 10 |
| | 重合率 % | 90 | 90 | 80 | 90 | 90 |
| ラテックス性状 | 固形分濃度 Wt % | 55 | 55 | 55 | 55 | 55 |
| | ゲル含有量 % | 17 | 21 | 9 | 68 | 0 |
| | ゲル分のMw ×10 ⁻⁴ | 60 | 66 | 73 | 54 | 30 |
| 生ラテックスの低温性 (5℃×1週間) | | ○ | ○ | ○ | ○ | ○ |
| 接着剤配合処方 | ラテックス | 100 | 100 | 100 | 100 | 100 |
| | DBP ²⁾ | 6 | 6 | 6 | 6 | 6 |
| | グリシン | 5 | 5 | 5 | 5 | 5 |
| 接着剤PH (20℃) | | 8.8 | 8.9 | 9.1 | 8.9 | 8.9 |
| 接着試験結果 | 初期接着強度 N/cm ² | 1.7 | 1.8 | 1.6 | 1.1 | 1.4 |
| | 耐熱クリープ (60℃×4時間) | ○ | ○ | ○ | ○ | × |

[0050]The passage of the following [additive agent / in Tables 1 and 2].

- 1) Nonion system emulsifier A; emulgen LS-106 (poly (ethylene glycol propylene glycol) alkyl ether, HLB=12.5, Kao Corp. make)
- 2) Nonion system emulsifier B; emulgen LS-114 (poly (ethylene glycol propylene glycol) alkyl ether, HLB=14.0, Kao Corp. make)
- 3) Nonion system emulsifier C; emulgen MS-110 (poly (ethylene glycol propylene glycol) alkyl ether, HLB=12.7, Kao Corp. make)
- 4) Nonion system emulsifier D; emulgen 105 (polyoxyethylene lauryl ether, HLB=9.7, Kao Corp. make)
- 5) Nonion system emulsifier E; emulgen A500 (polyoxyethylene derivative HLB=18.0, Kao Corp. make)
- 6) DBP; dibutyl phthalate, the Dainippon Ink chemicals company make [0051]

[Effect of the Invention]From comparison of the above example and comparative example, chloroprene latex of this invention, The adhesive composition which is excellent in freeze thaw stability, and is obtained from this, It excels in an initial adhesive property and the adhesion performance especially in a damp or wet condition, and it is in ** that balance with heat resistance is good, and this invention can provide the chloroprene latex which gives a suitable adhesive composition especially to adhesion of wood adhesion, adhesion of urethane foam, paper materials, etc., such as a plywood.

[Translation done.]